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BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

REPORT OF PINE BEETLE SURVEY
on the
MALHEUR NATIONAL FOREST AND ADJOINING PRIVATE LANDS

Season of 1943

by

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May, 1944

U. S. Department of Agriculture
Bureau of Entomology and Plant Quarantine
Forest Insect Investigations

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ABSTRACT

Basis

Data presented are from the thirteenth (1943) annual pine beetle survey.

Status of Infestation

The average trend of infestation remained more or less static during 1942. Infestation is normal except for light epidemic conditions on the Crow Flat unit and southern extremity of the Myrtle unit. Indications are that the infestation declined during 1943.

Estimated Gross Losses for 1942

<u>No. of trees</u>	<u>Volume M.b.m.</u>	<u>Board ft. per acre</u>	<u>Percent of stand</u>
43,700	27,700	27	.36

Recommendations

No direct control is necessary.

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The thirteenth annual survey of forest insect conditions in the ponderosa pine stands within and adjacent to the Malheur National Forest was conducted during the period August 28 to September 2, inclusive. As in the past, this survey was carried out as a cooperative project between the Forest Service and the Bureau of Entomology and Plant Quarantine. The field work was carried on by J. M. Whiteside, W. D. Bedard, and W. J. Buckhorn of the Bureau of Entomology and Plant Quarantine. Cooperative funds were provided by the Forest Service.

Due to the manpower shortage, the 1943 survey was very largely confined to a 100-percent cruise of insect-caused losses on the 320-acre check plots. The number of these plots was also reduced from eleven cruised in 1942 to nine in 1943. Observations on general stand conditions were made in connection with travel to and from the established plots, but no organized reconnaissance survey was undertaken.

The 1943 survey completed the 1942 loss records on the plots and provided a partial record of the 1943 loss. Infestation trends were computed from these data and used, together with previous loss records, to make the 1942 loss estimate for the forest as a whole.

Estimates of the virgin stand acreage have been revised from records of cutting furnished by the Forest Service.

Results of the 1943 Survey

The average loss trend for the nine plots remained more or less static during 1942; however, on individual plots the ratios to the previous year's loss fluctuated widely. In a measure, these extreme fluctuations were due to the exceptionally low level of infestation on many of the plots so that a few trees, more or less, caused the ratio to the previous year's loss to change rather drastically.

Pine beetle infestation decreased on all plots on the John Day area in 1942. On the Long Creek and Beech Creek plots of this area, losses were the lowest that they have been since the plots were established in 1936. Losses on these two plots, amounting to 0.07 and 1.06 percent of the stand, respectively, were the lowest and highest levels of infestation recorded on any of the Malheur plots in 1942. A sharp increase occurred on the Sawtooth plot on the Snow Mountain area. A similar trend was exhibited by the plots on that portion of this area lying within the boundaries of Ochoco National Forest. On the Malheur River area, losses declined to new low levels on both the Bridge Creek and Mahogany Spring plots, while the infestation increased on the Williams Ranch, Summit Creek and Crane Prairie plots. Losses on both the Summit Creek and Crane Prairie plots are at the highest level since the plots were established in 1937. An average of 113 board feet per acre on the Crane Prairie plot was the highest actual volume loss on any of the plots in 1942. The upward trend of infestation on these two plots may have been influenced by heavy wind-throw during the winters of 1940-41 and 1941-42. During this period the

Summit Creek plot lost 84 trees containing approximately 44,860 board feet, and the Crane Prairie plot lost 67 trees having some 60,990 board feet. The individual plot data for 1942 are presented in Table 1.

If 1943 was an average season with regard to pine beetle activity, approximately 47 percent of the seasonal loss should have been perceptible at the time of survey. On that basis it is estimated that the 1943 losses declined approximately 40 percent.

Most of the 1942 and 1943 attacks were widely scattered, with 78 percent of the mortality occurring in single trees and the remainder in small groups ranging from two to five trees. The western pine beetle, Dendroctonus brevicomis Lec., continued to be the most important insect attacking ponderosa pine. Many of the infested trees were attacked only lightly by the western pine beetle and then were filled in by a variety of other insects, chiefly D. monticolae, Melanophila sp., and Ips sp.

General Forest Conditions

During 1942 the infestation remained static or declined on all units except Sawtooth, Crow Flat, Summit Creek and North Fork. On the four units named the infestation increased but, lacking aggressiveness, continued at a normal status except on the Crow Flat, where it developed into a light epidemic. The only other center of light epidemic infestation present on the forest exists on the southern extremity of the Myrtle unit. It is the one remaining center out of the five that were present during 1941 on the Hiya, Beech Creek, Flagtail, Myrtle and Middle Fork units. Losses occurring over the forest as a whole during 1942 were estimated to be nearly 28,000,000 board feet amounting to 28 board feet per acre or 0.36 percent of the stand - slightly less than the 1941 loss of 0.37 percent of the stand. These estimated losses are presented by areas and units in Table 2.

Loss Trend

The trend of infestation on the plots during the past twelve years is graphically shown in Figure 1. The 1941 and 1942 losses on the nine plots cruised during 1943 amounted to 0.41 and 0.42 percent of the stand, respectively. The partial 1943 loss indicates that the trend was downward with a probable decline of 40 percent.

Recommendations

Generally low losses and a declining infestation combine to make direct control measures unnecessary on this forest.

Table 1: Ponderosa pine killed by bark beetles on virgin sample plots -
Malheur National Forest and adjacent private lands.

Area and Unit	PLOT DESCRIPTION						ACTUAL 1942 LOSS				
	Plot	Town-ship	Range	Sec.	Timbered Acreage	Pine Volume B.m. (1/1/42)	No. of Trees	Volume B.m.	B.m. per Acre	Percent of Stand	Ratio to 1941
JOHN DAY											
Long Creek	Long Creek	10 S	28 E	24 S $\frac{1}{2}$	320	2,932,000	4	2,010	6	.07	.40
Rudio Mountain	Rudio Mountain	11 S	28 E	26 W $\frac{1}{2}$	245	3,059,000	8	5,410	22	.18	.60
Beech Creek	Beech Creek	12 S	31 E	25 N $\frac{1}{2}$	313	2,410,000	27	25,420	81	1.06	.57
	Total				878	8,401,000	39	32,840	37	.39	.56
SNOW MOUNTAIN											
Sawtooth	Sawtooth	19 S	28 E	15 E $\frac{1}{2}$	320	4,977,000	23	19,550	61	.39	2.65
MALHEUR RIVER											
Bridge Creek	Bridge Creek	17 S	32 E	36 W $\frac{1}{2}$	320	4,683,000	12	6,910	22	.15	.45
Crow Flat	Williams Ranch	20 S	32 E	30 W $\frac{1}{2}$	320	4,782,000	36	28,550	89	.60	2.69
Middle Fork	Mahogany Spring	17 S	33 $\frac{1}{2}$ E	28 E $\frac{1}{2}$	320	3,697,000	18	19,230	60	.52	.63
North Fork	Summit Creek	17 S	35 E	29 E $\frac{1}{2}$	320	4,381,000	20	22,920	72	.52	1.91
North Fork	Crane Prairie	16 S	35 E	10 W $\frac{1}{2}$	320	8,403,000	46	36,090	113	.43	1.32
	Total				1600	25,946,000	132	113,700	71	.44	1.19
GRAND TOTAL	9 Plots				2798	39,324,000	194	166,090	59	.42	1.02

Table 2: Estimated insect-caused mortality of ponderosa pine by areas -
Malheur National Forest and adjacent private lands.

Area and Unit	PINE TYPE				GROSS 1942 LOSS				
	Virgin Acreage	Cutover Acreage	Total Acreage	Pine Volume M.b.m. (1/1/42)	No. of Trees	Volume M.b.m.	No. Trees per Section	B.m. per Acre	Percent of Stand
JOHN DAY									
Long Creek	16,220	3,240	19,460	203,600	280	180	9	9	.09
Rudio Mtn.	81,680		81,680	540,000	1,170	820	9	10	.15
Hiyu	19,050	21,630	40,680	468,650	2,170	1,260	34	31	.27
Beech Creek	86,440	2,240	88,680	644,000	5,600	3,360	41	38	.52
Fields Peak	25,760		25,760	59,500	360	180	14	7	.30
Canyon Creek	58,880	4,000	62,880	299,000	2,100	1,260	21	20	.42
Strawberry Mtn.	38,260	3,600	41,860	163,800	580	290	14	7	.18
Total	326,290	34,710	361,000	2,378,750	12,260	7,350	22	20	.31
SILVIES									
Flagtail	69,640	27,140	96,780	536,600	4,030	2,420	27	25	.45
Bear Valley	1,910	76,610	78,520	416,700	2,550	1,120	21	14	.27
Myrtle	87,770	26,930	114,700	783,200	3,650	2,180	21	19	.28
Total	159,320	130,680	290,000	1,736,500	10,230	5,720	22	20	.33
SNOW MOUNTAIN									
Sawtooth	53,000		53,000	324,000	3,650	2,190	44	41	.68
MALHEUR RIVER									
Lake Creek	31,510		31,510	318,700	570	430	12	14	.13
Summit Creek	32,140		32,140	459,900	1,620	1,380	32	43	.30
North Fork	73,880		73,880	944,100	4,120	3,500	36	48	.37
Bridge Creek	40,750	3,600	44,350	500,000	2,470	1,730	36	39	.35
Middle Fork	42,700	2,240	44,940	478,300	2,800	1,960	40	44	.41
Calamity	23,750	2,240	25,990	185,200	1,650	990	41	38	.53
Crow Flat	48,160	13,030	61,190	430,100	4,900	2,450	51	40	.57
Total	292,890	21,110	314,000	3,316,300	17,560	12,440	36	40	.38
GRAND TOTAL	831,500	186,500	1,018,010	7,755,550	43,700	27,700	28	27	.36



Figure No. 1

TREND OF CHECK PLOT LOSSES
WACCHEE NATIONAL FOREST

